

LANXESS presenting two new low free prepolymer technologies

- New low free TDI polycarbonate prepolymer for high-temperature applications
- Low free 1K blocked prepolymers for easier processing and enhanced performance

Cologne – August 4, 2021 – The Urethane Systems business unit of specialty chemicals company LANXESS will present innovative material developments at this year's Polyurethane Manufacturers Association (PMA) annual meeting. They will present two new prepolymers of the Adiprene range that are produced using low free (LF) technology so they contain very low diisocyanate content. The PMA will take place from August 7 to 9 in Salt Lake City, Utah, USA.

Meeting highest requirements

One of the most challenging applications for polyurethane casting systems is high-temperature applications. As polyurethane chemistries have advanced over the years, casting systems are being used more frequently in this high-performance segment. Ian Laskowitz, Applications Development Manager for Urethane Systems at LANXESS, will highlight at the PMA Meeting the novel Adiprene LF TR400 high-temperature prepolymer, which is based on polycarbonate.

This low free TDI prepolymer is cured with MCDEA (4,4'-methylenebis(3-chloro-2,6-diethyl-aniline) It is much easier to process than comparable prepolymer systems for high-temperature applications. For example, it offers a manageable processing/pour life. The resulting cast elastomers demonstrate have improved high-performance properties that comparable established polyurethane high-temperature system and have excellent high-temperature property retention. Thus, the tear strength is hardly reduced at

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elevated temperatures. A further strength is high resistance to heat aging at 150 °C.

Laskowitz's presentation will expand on the use of physical property testing at high temperature, comparing this new prepolymer to standard cast urethane materials, as well as high temperature physical property retention after heat aging at high application temperatures. The processing needs of the materials will also be discussed.

Easy processing and enhanced performance

LANXESS developed a unique 1K blocked prepolymer, Adiprene K LFM E820, based on caprolactam (CAP) blocked prepolymer and diamine curatives. This will be the focus of the presentation given by Senior Chemist George Brereton at the PMA annual meeting.

Less viscous blocked prepolymer systems, which are based on LF technology, allow for chemistries with non-traditional raw materials, including more viscous polycarbonate polyols and unique amine types. These stable 1K systems provide processors with numerous advantages, including increased control of the curing process and increased product consistency from batch to batch. Without restriction on pot life, these systems allow for the processing of large parts, complex contour designs, and roto-molding of hollow parts. These systems can offer enhanced thermos-mechanical performance, processing ease, and enhanced industrial hygiene.

The variety of possible applications of blocked LF prepolymers ranges from small thicknesses of 1-2 mm to really large parts up to several tons. For example, these systems are used as abrasive pad binders or coatings of industrial rollers, as well as in the impregnation of industrial belts. Another advantage for the processor is the elimination of the need for a mixing and metering system, which pays off in terms of component costs. Potential applications include dynamic bend stiffeners for thick cables such as submarine cables,

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industrial rolls, components for wind turbine rotor blades or large composite structures.

The LANXESS Urethane Systems business unit is one of the world's leading suppliers of polyurethane systems for elastomers, coatings, adhesives and sealants with special focus on solvent-free and monomer-free systems, and provides its customers decades of urethane chemistry know-how, comprehensive application expertise, and deep manufacturing experience.

For more information, visit ure.lanxess.com.

LANXESS is a leading specialty chemicals company with sales of EUR 6.1 billion in 2020. The company currently has about 14,800 employees in 33 countries. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe) and FTSE4Good.

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